

WHAT IS CLAIMED IS:

1. A chemical-mechanical polishing process for planarizing at least one or more of thin films formed on a substrate, wherein the chemical-mechanical polishing is performed using a slurry containing abrasive particles mainly made of sialon.
2. A chemical-mechanical polishing process according to claim 1, wherein the chemical-mechanical polishing using said slurry containing the abrasive particles mainly made of sialon is performed in a basic atmosphere.
3. A chemical-mechanical polishing process according to claim 2, wherein said basic atmosphere is formed using a suspension in which said slurry containing the abrasive particles mainly made of sialon is suspended in a solution of KOH/water/alcohol.
4. A chemical-mechanical polishing process according to claim 1, wherein the abrasive particles mainly made of sialon are formed from a gas system containing SiH_4 , N_2 , O_2 , and $\text{Al}(\text{CH}_3)_3$ by plasma CVD.
5. A chemical-mechanical polishing process for planarizing at least one or more of thin films formed on a substrate, wherein said thin films are subjected to

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chemical-mechanical polishing using a slurry containing abrasive particles mainly made of sialon, and the residual slurry and contamination are removed by spin cleaning.

6. A chemical-mechanical polishing process according to claim 5, wherein said spin cleaning is performed using chemicals comprising $\text{NH}_4\text{OH}-\text{H}_2\text{O}_2-\text{H}_2\text{O}$ and dilute hydrofluoric acid.

7. A chemical-mechanical polishing process according to claim 6, wherein after spin cleaning using said chemicals, said substrate is rinsed with pure water.

8. A chemical-mechanical polishing process according to claim 5, wherein the chemical-mechanical polishing using said slurry containing the abrasive particles mainly made of sialon is performed in a basic atmosphere.

9. A chemical-mechanical polishing process according to claim 8, wherein said basic atmosphere is formed using a suspension in which said slurry containing the abrasive particles mainly made of sialon is suspended in a solution of KOH/water/alcohol.

10. A chemical-mechanical polishing process according to claim 5, wherein the abrasive particles mainly made of sialon are formed from a gas system containing SiH_4 , N_2 , O_2 , and $\text{Al}(\text{CH}_3)_3$ by plasma CVD.

11. A chemical-mechanical polishing process according to claim 5, wherein said slurry containing the abrasive particles mainly made of sialon is used for chemical-mechanical polishing of a tungsten film .

12. A chemical-mechanical polishing process for planarizing at least one or more of thin films formed on a substrate, wherein the chemical-mechanical polishing is performed using a slurry containing abrasive particles mainly made of boehmite.

13. A chemical-mechanical polishing process according to claim 12, wherein the particles of boehmite are formed by dipping of particles of Al in a hot water.

14. A chemical-mechanical polishing process according to claim 13, wherein said hot water is added with sodium aluminate.

15. A chemical-mechanical polishing process for planarizing one or more of thin films formed on a substrate, wherein said chemical-mechanical polishing is performed using a slurry containing abrasive particles made of a material higher in hardness than SiO_2 .

16. A chemical-mechanical polishing process for planarizing at least one or more of thin films formed on a substrate, wherein said thin films are subjected to

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Chemical-mechanical polishing using a slurry containing abrasive particles mainly made of boehmite, and the residual slurry and contamination are removed by spin cleaning.

17. A chemical-mechanical polishing process according to claim 16, wherein said spin cleaning is performed using chemicals comprising $\text{NH}_4\text{OH}-\text{H}_2\text{O}_2-\text{H}_2\text{O}$ and dilute hydrofluoric acid.

18. A chemical-mechanical polishing process according to claim 17, wherein after spin cleaning using said chemicals, said substrate is rinsed with pure water.

19. A chemical-mechanical polishing process according to claim 16, wherein the abrasive particles of boehmite are formed by dipping of particles of Al in a hot water.

20. A chemical-mechanical polishing process according to claim 19, wherein said hot water is added with sodium aluminate.

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